BLM NAVIGATOR

Special Services User Guide

Nov 16, 2018

<u>Legal Description</u>

This document uses the term "legal description" to denote a series of characters that describe a parcel of land according to the Public Land Survey System (PLSS). This legal description is made up of a series of identifiers, from the most general to the most specific: state, meridian code, township, range, duplicate, and optionally section, aliquot part, government lot, or mineral survey. The legal description can be input in of two ways:

- Short form: NV 21 T38N R56E (no duplicate)
- PLSS form: NV21T0380N0560E0

The duplicate identifier is used when a parcel is within the same section or aliquot part but disjointed, i.e. where the section is split by a body of water. Duplicate identifiers can only be queried using the PLSS form.

Regardless of the short form or PLSS form, the section and following identifiers are always entered the same way:

- NV 21 T38N R56E
- NV 21 T38N R56E ALL
- NV 21 T38N R56E SEC 10
- NV 21 T38N R56E SEC 10 ALL
- NV 21 T38N R56E SEC 10 ALIQ SESW
- NV 21 T38N R56E SEC 10 ALIQ SES2 (equivalent to SESW + SESE)
- NV 21 T38N R56E SEC 10 LOT 10
- NV 21 T38N R56E SEC 10 MINERAL SURVEY 14255

"ALIQ" denotes an aliquot lot, which is usually a half, quarter, or quarter-quarter division of a section. "LOT" denotes a government-owned lot which is not surveyed for private ownership. "MINERAL SURVEY" denotes a lot that was part of a special survey – unlike most PLSS tracts, mineral surveys are not usually rectangular in shape.

Township or Section identifiers denote the identified township or section as a discrete object. Adding the "ALL" keyword denotes all parcels at the most atomic level, bounded by the specified identifier. For example, "NV 21 T38N R56E" indicates the township itself, while "NV 21 T38N R56E ALL" indicates not the township, but all of the aliquot lots, government lots, or mineral surveys contained within the township.

In addition, the legal description can be input as the raw PLSS ID recognized by the CadNSDI standards:

- NV210380N0560E0
- NV210380N0560E0SN010
- NV210380N0560E0SN010ASESW

The list of principal meridians and their associated codes is on page 39 of the Handbook for PLSS Standardized Data located at https://nationalcad.org/download/PublicationHandbookOct2016.pdf

Note occasionally there is data in the database at the quarter quarter level but not at the quarter level. In such cases using the short form, the service will automatically create the quarter level data from the quarter quarter level data. This functionality was provided for legacy Geocommunicator dependent systems. Using the raw PLSS id, queries will only return data that is in the database. This data does not always exist at all levels, so querying at the quarter level could return no results even when quarter quarter level data exists.

Find Land Description (FindLD)

FindLD takes two inputs:

- *legaldescription:* a text field in the format described above in the "Legal Description" section
- *returnalllevels:* a text field that can contain the values "true," "false," or no value (treated as "false")

Multiple items can be input in the *legaldescription* field by separating them with a pipe symbol, i.e. NV 21 T38N R56E SEC 10 LOT 10 | NV 21 T38N R56E SEC 10 MINERAL SURVEY 14255. This service returns a JSON object with six properties:

- legaldescription: a copy of the input *legaldescription* string;
- generatedplss: the PLSS ID(s) generated by parsing the *legaldescription* input;
- features: an array of JSON objects representing parcels matching the *generatedplss* search;
- alllevels (optional): a JSON object representing features corresponding to the township and section polygons containing the objects listed in the features array;
- status: "success" if the operation ran to completion (even if no results were found), "fail" if there was an error processing the operation; and
- statusmsg (optional): if status is "fail," a message describing the failure.

If the service finds and returns data in the *features* array, those objects will conform to the ESRI standards for geometry objects:

- attributes: a series of properties describing the object
  - landdescription: the PLSS ID of the parcel
- geometry: a JSON representation of the parcel's geometry

The *landdescription* attribute will usually be the same value as one of the values listed in the *generatedplss* array.

If the user enters "true" in the *returnalllevels* parameter, the *alllevels* object will optionally be populated with two properties: *township* (if *landdescription* describes a section or smaller division, or a township with the "ALL" keyword) and *firstdivision* (if *landdescription* describes an aliquot or government lot,

mineral survey, or a section with the "ALL" keyword). Both *township* and *firstdivision* contain an array called *features*, which conforms to the same specification as the *features* array in the response.

Example Input:

legaldescription: NV 21 T38N R56E SEC 10 ALIQ SESW
returnalllevels: true

Example Output:

```
{
 "legaldescription": "NV 21 T38N R56E SEC 10 ALIQ SESW",
 "generatedplss": [
  "NV210380N0560E0SN100ASESW"
 ],
 "features": [
  {
   "attributes": {
    "landdescription": "NV210380N0560E0SN100ASESW"
   },
   "geometry": {
    "rings": [
     [
      [
       -115.65099749553792,
       41.19378006889508
      ],
      [
       -115.65107843452205,
       41.1901558010494
      ],
      [
       -115.65344365150327,
       41.190173787490323
      ],
      [
       -115.65580886848443,
       41.190191773931247
      ],
      [
       -115.65574591594122,
       41.193816041776927
      ],
      [
       -115.65099749553792,
       41.19378006889508
      ]
     ]
    ],
    "spatialReference": {
     "wkid": 4326,
     "latestWkid": 4326
    }
   }
```

```
   }
  ],
 "alllevels": {
  "township": {
   "features": [
    {
     "attributes": {
      "landdescription": "NV210380N0560E0"
     },
     "geometry": {
      "rings": […],
      "spatialReference": {
       "wkid": 4326,
       "latestWkid": 4326
      }
     }
    }
   ]
  },
  "firstdivision": {
   "features": [
    {
     "attributes": {
      "landdescription": "NV210380N0560E0SN100"
     },
     "geometry": {
      "rings": […],
      "spatialReference": {
       "wkid": 4326,
       "latestWkid": 4326
      }
     }
    }
   ]
  }
 },
 "status": "success"
}
```

Derive Land Description (DeriveLD)

DeriveLD takes two inputs:

- *selectiongeometry:* a JSON object that conforms to the ESRI standards for geometry objects which represents one or more points, polylines, or polygons (only the *geometry* object(s) will be used in the search; any *attributes* objects included in the input will be ignored)
- *returnalllevels:* a text field that can contain the values "true," "false," or no value (treated as "false")

This service returns a JSON object with five properties:

- selectiongeometry: a copy of the input *selectiongeometry* JSON object;

- landdescriptions: an array of PLSS IDs corresponding to all tracts that the *selectiongeometry* object intersects with;
- alllevels (optional): an array of PLSS IDs corresponding to the townships and sections containing the objects listed in the landdescriptions array;
- status: "success" if the operation ran to completion (even if no results were found), "failure" if there was an error processing the operation; and
- statusmsg (optional): if status is "fail," a message describing the failure.

If the user enters "true" in the *returnalllevels* parameter, the *alllevels* array will be populated with two properties: *township* and *firstdivision*. Both *township* and *firstdivision* contain an array called *landdescriptions*, which conforms to the same specification as the *landdescriptions* array in the response.

Example Input:

selectiongeometry:

```
{
 "features": [
  {
   "geometry": {
    "rings": [
     [
      [
       -115.65099749553792,
       41.19378006889508
      ],
      [
       -115.65107843452205,
       41.1901558010494
      ],
      [
       -115.65344365150327,
       41.190173787490323
      ],
      [
       -115.65580886848443,
       41.190191773931247
      ],
      [
       -115.65574591594122,
       41.193816041776927
      ],
      [
       -115.65099749553792,
       41.19378006889508
      ]
     ]
    ]
   ],
   "spatialReference": {
```

```
      "wkid": 4326,
      "latestWkid": 4326
     }
    }
   }
  ]
}
```

selectiongeometry: true

Example Output:

```
{
 "selectiongeometry": {
  "features": [
   {
    "geometry": {
     "rings": [
      [
       -115.65099749553792,
       41.19378006889508
      ],
      [
       -115.65107843452205,
       41.1901558010494
      ],
      [
       -115.65344365150327,
       41.190173787490323
      ],
      [
       -115.65580886848443,
       41.190191773931247
      ],
      [
       -115.65574591594122,
       41.193816041776927
      ],
      [
       -115.65099749553792,
       41.19378006889508
      ]
     ],
     "spatialReference": {
      "wkid": 4326,
      "latestWkid": 4326
     }
    }
   }
  ]
 },
 "landdescriptions": [
  "NV210380N0560E0SN010ANESW",
  "NV210380N0560E0SN010ANWSW",
  "NV210380N0560E0SN010ASESW",
```

```
    "NV210380N0560E0SN010ASWSW"
  ],
  "alllevels": {
   "township": {
    "landdescriptions": [
     "NV210380N0560E0"
    ]
   },
   "firstdivision": {
    "landdescriptions": [
     "NV210380N0560E0SN010"
    ]
   }
  },
  "status": "success"
}
```

Township Geocoder Get Latitude/Longitude (GetLatLon)

GetLatLon takes two inputs:

- *trs:* a text field in the format described above in the "Legal Description" section
- *returnalllevels:* a text field that can contain the values "true," "false," or no value (treated as "false")

Multiple items can be input in the *trs* field by separating them with a pipe symbol, i.e. NV 21 T38N R56E SEC 10 LOT 10 | NV 21 T38N R56E SEC 10 MINERAL SURVEY 14255. This service returns a JSON object with six properties:

- trs: a copy of the input *trs* string;
- generatedplss: the PLSS ID(s) generated by parsing the *trs* input;
- coordinates: an array of JSON objects representing the centroids of parcels matching the generatedplss search;
- alllevels (optional): a JSON object representing centroids corresponding to the township and section polygons containing the objects listed in the features array;
- status: "success" if the operation ran to completion (even if no results were found), "failure" if there was an error processing the operation; and
- statusmsg (optional): if status is "fail," a message describing the failure.

If the service finds and returns data in the *coordinates* array, those objects will contain three properties:

- plssid: the PLSS ID of the parcel;
- lat: the latitude in decimal degrees of the centroid of the parcel; and
- lon: the longitude in decimal degrees of the centroid of the parcel.

The *plssid* property will usually be the same value as one of the values listed in the *generatedplss* array.

If the user enters "true" in the *returnalllevels* parameter, the *alllevels* object will optionally be populated with two properties: *township* (if *trs* describes a section or smaller division, or a township with the "ALL" keyword) and *firstdivision* (if *trs* describes an aliquot or government lot, mineral survey, or a section with the "ALL" keyword). Both *township* and *firstdivision* contain an array called *features*, which conforms to the same specification as the *coordinates* array in the response.

Example Input:

trs: NV 21 T38N R56E SEC 10 ALIQ SESW
returnalllevels: true

Example Output:

```
{
 "trs": "NV 21 T38N R56E SEC 10 ALIQ SESW",
 "generatedplss": [
  "NV210380N0560E0SN100ASESW"
 ],
 "coordinates": [
  {
   "plssid": "NV210380N0560E0SN100ASESW",
   "lat": 41.191987067322351,
   "lon": -115.65340764099672
  }
 ],
 "alllevels": {
  "township": {
   "features": [
    {
     "plssid": "NV210380N0560E0",
     "lat": 41.1756891755692,
     "lon": -115.66049740804863
    }
   ]
  },
  "firstdivision": {
   "features": [
    {
     "plssid": "NV210380N0560E0SN100",
     "lat": 41.19741311499979,
     "lon": -115.6509190680048
    }
   ]
  }
 },
 "status": "success"
}
```

Township Geocoder Get Township/Range/Section (GetTRS)

GetTRS takes four inputs:

- *lat*: the latitude of the search coordinate in either decimal degrees or space-separated degrees/minutes/seconds
- *lon*: the longitude of the search coordinate in either decimal degrees or space-separated degrees/minutes/seconds
- *units*: a text field that can contain "DD" if lat/lon are in decimal degrees, or "DMS" if lat/lon are in degrees/minutes/seconds format
- *returnalllevels:* a text field that can contain the values "true," "false," or no value (treated as "false")

This service returns a JSON object with seven properties:

- lat: a copy of the input *lat* value;
- lon: a copy of the input *lon* value;
- units: a copy of the input *units* value;
- features: an array of JSON objects representing parcels found at the specified *lat/lon* coordinates;
- alllevels (optional): a JSON object representing features corresponding to the township and section polygons containing the objects listed in the features array;
- status: "success" if the operation ran to completion (even if no results were found), "failure" if there was an error processing the operation; and
- statusmsg (optional): if status is "fail," a message describing the failure.

If the service finds and returns data in the *features* array, those objects will conform to the ESRI standards for geometry objects:

- attributes: a series of properties describing the object
  - landdescription: the PLSS ID of the parcel
- geometry: a JSON representation of the parcel's geometry

If the user enters "true" in the *returnalllevels* parameter, the *alllevels* object will be populated with two properties: *township* and *firstdivision*. Both *township* and *firstdivision* contain an array called *features*, which conforms to the same specification as the *features* array in the response.

Example Input:

lat: 41.206456323113024
lon: -115.61511640360382
units: DD
returnalllevels: true

Example Output:

```
{
 "lat": "41.206456323113024",
 "lon": "-115.61511640360382",
```

```
"units": "DD",
"features": [
 {
  "attributes": {
   "landdescription": "NV210380N0560E0SN010ASESW"
  },
  "geometry": {
   "rings": [
    [
     [
      -115.61272234925696,
      41.204670858873101
     ],
     [
      -115.61750674254205,
      41.204616899550331
     ],
     [
      -115.61747976288069,
      41.208241167396011
     ],
     [
      -115.61269536959554,
      41.208277140277858
     ],
     [
      -115.61272234925696,
      41.204670858873101
     ]
    ]
   ],
   "spatialReference": {
    "wkid": 4326,
    "latestWkid": 4326
   }
  }
 }
],
"alllevels": {
 "township": {
  "features": [
   {
    "attributes": {
     "landdescription": "NV210380N0560E0"
    },
    "geometry": {
     "rings": […],
     "spatialReference": {
      "wkid": 4326,
      "latestWkid": 4326
     }
    }
   }
  ]
 },
 "firstdivision": {
```

```
  "features": [
   {
    "attributes": {
     "landdescription": "NV210380N0560E0SN010"
    },
    "geometry": {
     "rings": […],
     "spatialReference": {
      "wkid": 4326,
      "latestWkid": 4326
     }
    }
   }
  ]
 }
},
"status": "success"
}
```